



SPAtial Cognition to Enhance mathematical learning (SPACE)

Appendices

March 2025

Amy Hall, Paula Verdugo, Katherine Young, Ann Dowker,
Jane Lewis





The Education Endowment Foundation is an independent charity dedicated to breaking the link between family income and education achievement. We support schools, nurseries and colleges to improve teaching and learning for 2 – 19-year-olds through better use of evidence.

We do this by:

- **Summarising evidence.** Reviewing the best available evidence on teaching and learning and presenting in an accessible way.
- **Finding new evidence.** Funding independent evaluations of programmes and approaches that aim to raise the attainment of children and young people from socio-economically disadvantaged backgrounds.
- **Putting evidence to use.** Supporting education practitioners, as well as policymakers and other organisations, to use evidence in ways that improve teaching and learning.

We were set-up in 2011 by the Sutton Trust partnership with Impetus with a founding £125m grant from the Department for Education. In 2022, we were re-endowed with an additional £137m, allowing us to continue our work until at least 2032.

For more information about the EEF or this report please contact:



Education Endowment Foundation
5th Floor, Millbank Tower
21–24 Millbank
SW1P 4QP



info@eefoundation.org.uk

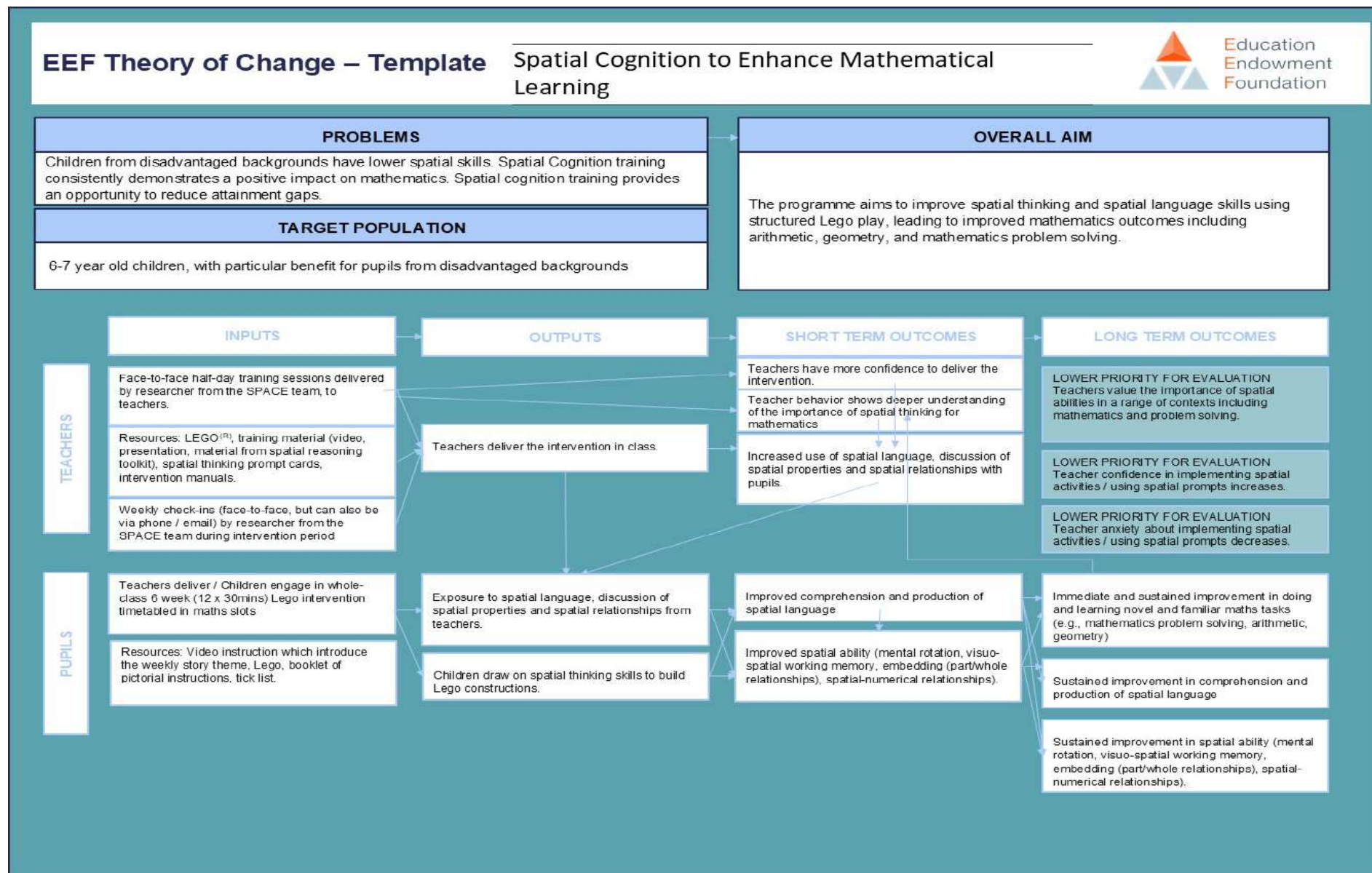


www.educationendowmentfoundation.org.uk

Contents

Appendix A Theory of Change.....	4
Appendix B Teaching staff information sheet	5
Appendix C Teaching staff consent form	9
Appendix D Data privacy notice	11
Appendix E Memorandum of Understanding.....	18
Appendix F Parent/guardian information sheet	23
Appendix G Parent/guardian opt-out form.....	26
Appendix H Teaching staff interview topic guide.....	27
Appendix I Disaggregated summary of school staff interviewees by school.....	30
Appendix J Delivery team interview topic guide	31
Appendix K Example observation guidelines	32
Appendix L Number of survey participants per school by time point.....	34
Appendix M Q-Q plots to for deviation from normality for each assessment	35

Appendix A Theory of Change



Appendix B Teaching staff information sheet

TEACHER, TEACHING ASSISTANT AND SENIOR LEADERSHIP TEAM REPRESENTATIVE INFORMATION SHEET

Title of Study: Pilot evaluation of SPATial Cognition to Enhance mathematical learning (SPACE)

University of Surrey Ref: FHMS 22-23 101 EGA

Version 2 – 28/02/2023

PLEASE KEEP A COPY OF THIS INFORMATION SHEET FOR YOUR RECORDS

TAKING PART

Invitation Paragraph

Your school is taking part in the evaluation of the SPATial Cognition to Enhance mathematics (SPACE) programme, which aims to improve children's mathematics competence through structured Lego play, as approved by your headteacher. This means that you will receive SPACE training, deliver twice-weekly sessions and support the evaluation team to collect data to understand the programme, among other activities.

We would also like to invite you to take part in some evaluation data collection activities. This information sheet provides more information about what that will involve.

- For teachers and teaching assistants, you are being invited to complete a survey (repeated at three time points) to assess the impact of SPACE on teachers' understanding and confidence in teaching spatial aspects of maths, and to gather views about the programme. In addition, you may be asked to take part in an interview to gather your views about SPACE in more detail
- For SLT representatives, you are being invited to take part in an interview to gather your views about SPACE in more detail

Research evidence suggests there is a relationship between children's spatial abilities (e.g., spatial thinking and spatial language) and their mathematics outcomes, with the potential for spatial training to increase children's achievement in mathematics. The evidence indicates that spatial training programmes support increases in children's mathematics attainment, with the largest gains for children from disadvantaged backgrounds.

What is the purpose of the study?

The evaluation of SPACE aims to obtain feedback on the delivery of the SPACE programme. For teachers and teaching assistants this involves collecting your views about feasibility, the sufficiency of the support provided for delivery, and perceptions of any impacts on children. For SLT representatives this involves perceptions of the fit of SPACE with your school strategy and priorities. This will inform decisions about further development and evaluation of SPACE.

Who is responsible for this study?

SPACE is being independently evaluated by the Centre for Evidence and implementation (CEI), led by Jane Lewis. The programme is being delivered by the University of Surrey, led by Professor Emily Farran, with collaborators at University College Dublin, Loughborough University, and Birkbeck.

Why have I been invited to take part?

You are invited to take part because you are either the Year 2 teacher or teaching assistants who will be trained to deliver SPACE at your school, or the relevant Senior Leadership Team representative. Your insights about its feasibility and impacts will be very valuable.

Do I have to take part?

Participation in the surveys and interview is voluntary and you do not have to take part. Please contact us if there is anything that is not clear, if you have any questions, or need more information.

What will taking part involve?

For teachers and teaching assistants, you will be invited to take part in an online survey at three time points: at the initial SPACE training, after you have delivered SPACE, and at the end of the following term. The survey should take no more than 15 minutes to complete at each time point. The first survey will ask questions about your current practice in teaching spatial skills, your understanding and confidence, and the school context. The second survey will repeat some of these questions and ask about your experiences of using SPACE. The third survey will again repeat some of the questions and ask whether you are continuing to use the SPACE approaches.

Some teachers and teaching assistants will also be invited to take part in an interview, conducted by phone or virtual platform (e.g. Zoom). This will be to discuss your experiences of using SPACE and views about the programme in more detail. The interview will last around 30-45 minutes and be audio-recorded and transcribed for analysis.

SLT representatives will be invited to take part in an interview, conducted by phone or virtual platform (e.g. Zoom). This will be to discuss how SPACE has been delivered in your school and how it fits with school priorities. This interview will last around 30 minutes and be audio-recorded and transcribed for analysis.

You are free to withdraw from the evaluation without giving a reason. To do so, please contact Amy Hall, CEI, on amy.hall@ceiglobal.org.

What are the possible benefits in taking part?

The information from the surveys and interviews will help us to understand whether SPACE is a feasible and acceptable programme that should be tested further with a larger number of schools, and whether any modifications are needed to the programme and the training.

Are there any potential risks involved?

The evaluation requires time from school staff, but is of short duration, and no risks have been identified.

How is the project being funded?

The SPACE programme and the evaluation are being funded by the Education Endowment Foundation (EEF), an independent charity dedicated to breaking the link between household income and educational attainment.

Will my participation be kept confidential?

The data collected will be kept confidentially and securely and will be used for research purposes only.

Information collected may be reviewed for monitoring and audit purposes, by the University of Surrey and/or regulators who will treat the data in confidence.

Will my data be shared or used in future studies?

We will share the anonymised survey data with the SPACE delivery team at the University of Surrey, so that they can carry out further analysis. These data will be deposited or submitted to an open source online research data repository at the end of the study, so that they may be used for future research. Interview recordings will be transcribed by an approved supplier. All interview data will be stored confidentially on CEI's secure servers and will not be shared outside the evaluation team or used in future research. Interview data will be securely destroyed 2 years after the end of the study.

What will happen to the results of the study?

CEI will write an evaluation report. This will be published on the Education Endowment Foundation website. A summary of the study findings will be sent to your school. Findings may also be disseminated via research publications.

Who has reviewed this study?

This study was reviewed and given a favourable ethical opinion by the University of Surrey Ethics Committee.

YOUR PERSONAL DATA**What is personal data?**

'Personal Data' means any information that identifies you as an individual. The personal data that we will collect will include your name, which is regarded as 'personal data'. This will be used to contact you to take part in evaluation activities. Staff names will be replaced by a Unique Personal Number (UPN) and the document linking UPNs with personal data will be stored in a password protected file.

Who is handling my personal data?

CEI and the University of Surrey, who have the legal responsibility for managing your personal data in this study, will act as 'Independent Data Controllers'. They are responsible for looking after your data and using it properly. Only pseudonymised data and the "Unique Identifier Key" documents will be shared between the two teams (abiding by a legal data sharing agreement).

What will happen to my personal data?

We will only use identifiable personal information from people who have agreed to take part in research and process this data fairly and lawfully. CEI and the University of Surrey and CEI process personal data for the purposes of carrying out research in the public interest and for legitimate interests. This means that when you take part in this study, we will use and look after personal data in the ways needed to achieve the outcomes of the study.

Your personal data will be held and processed in the strictest confidence, and in accordance with current data protection regulations. When acting as the data controller, CEI will keep identifiable information 2 years after the study has finished, and the University will keep identifiable information for 6 years after the study has finished.

Your rights to access, change or move information are limited, as we need to manage information in specific ways for the research to be reliable and accurate. If you decide to withdraw from the study once we have begun data analysis (20th December 2023) we may not be able to withdraw your data. We will keep and use the minimum amount of personally-identifiable information that we have already collected in order to complete the study.

If you wish to complain about how CEI or the University of Surrey have handled your personal data, you can contact CEI's Data Protection Office (dpo@whatworks-csc.org.uk) or the University of Surrey Data Protection Officer (dataprotection@surrey.ac.uk). If you are not satisfied with our response or believe we are processing your personal data in a way that is not lawful, you can contact the Information Commissioner's Office (ICO) (<https://ico.org.uk/>).

You can find out more about how we use your information by contacting dpo@theevidencequarter.com or dataprotection@surrey.ac.uk or at <https://www.surrey.ac.uk/information-management/data-protection>.
mailto:dpo@whatworks-csc.org.uk

FURTHER INFORMATION

What if you have a query or something goes wrong?

If you have any questions or require more information about the evaluation, please contact CEI using the following contact details:

Jane Lewis

Centre for Evidence and Implementation

The Evidence Quarter, Albany House,

London,

SW1H 9EA

Jane.lewis@ceiglobal.org

020 8175 1313

If you have any questions or require more information about the delivery of SPACE, please contact the SPACE team using the following contact details:

Professor Emily K. Farran

University of Surrey

06AC05, School of Psychology

Guildford

Surrey

GU2 7XH

e.farran@surrey.ac.uk

Thank you for reading this information sheet.

Appendix C Teaching staff consent form

TEACHER, TEACHING ASSISTANT AND SENIOR LEADERSHIP TEAM REPRESENTATIVE CONSENT FORM

Title of Study: Pilot evaluation of SPAtial Cognition to Enhance mathematical learning (SPACE)

University of Surrey Ref: FHMS 22-23 101 EGA

Version 2- 28/02/2023

Thank you for considering taking part in this research.

Please complete this form after you have read the Information Sheet and/or listened to an explanation about the research.

The person asking for your consent must explain the project to you before you agree to take part. If you have any questions about the Information Sheet or their explanation, please ask the researcher before you make your decision. You will be given a copy of this Consent Form and the Information Sheet to keep and refer to at any time.

By **initialling** each box, you are consenting to this part of the study. Any un-initialled boxes will mean that you DO NOT agree to that part of the study and this may mean you are ineligible for the study.

Please enter the date and place your initials after each point listed below.

Date:.....

Taking part in the study

	Statement	Please initial each box
1	I confirm that I have read and understood the information sheet dated Version 2 - 28/02/2023 for the above study. I have had the opportunity to consider the information and asked questions which have been answered satisfactorily.	
2	I understand that my participation is voluntary and that I am free to withdraw at any time during the study without giving any reason. Furthermore, I understand that data already collected can only be withdrawn up to 20 th December 2023	
3	I understand that information I provide may be subject to review by responsible individuals from the Centre for Evidence and Implementation or the University of Surrey and/or regulators for monitoring and audit purposes.	
4	If I take part in an interview, I consent to it being audio-recorded, transcribed by a transcription agency, and anonymised quotes being	

4	If I take part in an interview, I consent to it being audio-recorded, transcribed by a transcription agency, and anonymised quotes being used in the report, without including details that could identify me.	
5	If I take part in a survey, I consent to my personal data being shared with the delivery team at the University of Surrey for the purposes described in the information sheet.	
6	I understand that information I provide will be used in various anonymised outputs, including the evaluation report, evaluation summary and other publications.	
7	I understand that my personal data, including this consent form, which link me to the research data, will be kept securely in accordance with data protection guidelines, and only be accessible to the immediate research team or responsible persons at the Centre for Evidence and Implementation and the University of Surrey.	
8	I understand any personal contact details collected about me, such as my phone number and address, will not be shared beyond the study team.	
9	I agree to take part in this study.	

Signatures		
Name of Participant	Signature	Date
Name of Researcher	Signature	Date

Appendix D Data privacy notice



Centre for Evidence and Implementation

Privacy Notice for the SPACE Pilot Evaluation

1. Introduction

Centre for Evidence and Implementation and its affiliates, subsidiaries and related entities ("CEI") and the University of Surrey, ("we", "us", "our") is committed to protecting the privacy and security of the personal data we collect about research participants("you/your"). The Education Endowment Foundation (EEF) is the funder for this project.

The purpose of this privacy notice is to explain what personal data we collect about you when we conduct research for the SPACE evaluation project ("Project"). When we do this, we are the data controller.

Please read this privacy notice carefully as it provides important information about how we handle your personal information and your rights. If you have any questions about any aspect of this privacy notice you can contact us using the information provided below or by emailing us at dpo@theevidencequarter.com quoting SPACE in the subject or body of the email.

2. Personal data we collect

We shall be processing the data of several categories of data subject. Please read the section below that is relevant to you:

Children

- Name
- Age
- School name
- Model Booklet
- Date of birth
- Gender
- Ethnicity
- Telephone number
- Email address
- Home address including postcode
- Whether you have a disability or any Special Educational Needs (SEN)
- Assessment Data (the results of a questionnaire as part of the research)
- A randomly generated nu Answers from surveys with you which are recorded
- Unique Identifying Number, generated by a school for this project, that will be used by CEI to conduct research on data without the risk of identifying you whilst the research is being conducted

School staff (Senior leadership, teachers and teaching assistants)



- Name
- Email address
- Telephone number
- Place of work
- Occupation
- Interview recording log
- Survey Responses
- Answers in interviews you have with us which are recorded
- A randomly generated number, generated by a school for this project, that will be used by CEI to conduct research on data without the risk of identifying you whilst the research is being conducted

3. How we collect information about you

We may collect personal data in a variety of ways and at a variety of times throughout the research study being conducted. We refer to “primary data collection” when data is collected directly from you and we refer to “secondary data collection” when the data is not collected directly from you) Please read the section below that is relevant to you:

Child

- From your parents within communications we have with them (secondary data collection)
- From yourself via a paper assessment (primary data collection)
- From your school via administrative data (secondary data collection)

School staff

- From yourself via online survey (primary data collection)
- From yourself via an online interview (primary data collection)
- From your school via administrative data (secondary data collection)

4. Purposes for which we use personal data and the legal basis

When conducting the research study, we may use your personal data for the following purposes and on the following lawful bases. The table below is relevant to all data subjects involved in the research study:

Children

Purpose	Lawful Basis for Processing
To write a research findings report based on information collected and analysed. No personal data will be in the report.	Processing is necessary for the purposes of the legitimate interests pursued CEI, also known as “legitimate interest” under UK GDPR Article 6.1(f).



To conduct an interview with you, which will be recorded.	
To transcribe the audio captured from any recorded interviews we have with you.	
To identify your data, which would be deleted where possible, should you no longer agree to have your data processed for the purpose of conducting the Project.	
To identify personal data and take relevant action upon submission of a data subject rights request.	The lawful basis we shall be relying on is for the compliance with a legal obligation. The legal obligation is the UK General Data Protection Regulation to uphold your data protection rights.

NOTE: Only anonymous research data will be shared with the University of Surrey by CEI and any personal data processed by the University of Surrey, such as individuals within the research team in order to facilitate the Project would be under the lawful basis of Public Task (GDPR Article 6.1(e)).

5. Sharing your data

It is unlikely that we'll ever share your personal data outside the UK. If, however, it becomes necessary for the purposes of conducting our research we will only share it with organisations in countries benefiting from a UK or European Commission adequacy decision, or on the basis of International Data transfer Agreements, European Commission Standard Contractual Clauses with a UK required addendum (both of which are recognised by the UK) which contractually oblige the recipient to process and protect your personal data to the standard expected within the UK.

Any data shared with the below categories of recipients is the minimum necessary for the task they have been instructed to carry out on our behalf or in conjunction with us. Each category of recipient is subject to pre-approved review to ensure comparative technical and organisational measure for keeping the data secure.

- All personal information used in the research, shared with our Research Partner (University of Surrey), is anonymised by CEI before being shared
- Pre-approved transcription vendors
- Pre-approved online survey platform providers
- Pre-approved digital storage and communications service providers
- Pre-approved data entry service providers



There may be scenarios where we are subject to a legal obligation to disclose or share your personal data, such as with law enforcement agencies, regulatory bodies or public authorities in order to prevent or detect crime. We will only ever disclose your personal data to these third parties to the extent we are required to do so by law.

We may also share your personal data if we choose to sell, transfer, or merge parts of our business and/or group, or our assets in the future. Or we may seek to acquire other businesses or merge with them. During any such process, we may share your data with other parties. We will only do this if they agree to keep your data safe and private. If a change to our group happens, then other parties may use your data in the same way as set out in this notice.

6. How long we keep your data

Data shall be reduced, redacted, de-identified and deleted at appropriate times so we retain the minimum amount of data possible throughout the research study. We shall keep your personal information up to 3 years after the end of the research study. We will then dispose of personal information by securely deleting your data.

Pseudonymous data (this is where your information has been given an identifier, like a number by a school so we don't hold more information about you than we need), will be held by CEI for 3 years after completion of the project.

Transcription vendors are instructed to confirm deletion of interview recordings and any copies of transcriptions of interviews within 7 days of delivery of the transcription to CEI.

Anonymised data shared with our research partner (University of Surrey) is held for 6 years after the completion of the project before being destroyed.

7. How we protect your data

We implement appropriate technical and organisational measures to protect data that we process from unauthorised disclosure, use, alteration or destruction. Data protection assessments are conducted for each research project and all recipients of data used within any research data.

Your information is securely stored on a dedicated drive, and access is controlled by Surrey's and CEI's secure access policy for the duration of the research study period.

We will always keep these under review to make sure that the measures we have implemented remain appropriate.

Any personal data is not subject to any automated decision-making.



8. Your rights and options

You have the following rights in respect of your personal data:

- You have the right of access to your personal data and can request copies of it and information about our processing of it.
- If the personal data we hold about you is incorrect or incomplete, you can ask us to rectify or add to it.
- Where we are using your personal data with your consent, you can withdraw your consent at any time.
- Where we are using your personal information because it is in our legitimate interests to do so, you can object to us using it this way.
- We are not using your personal data for direct marketing, including profiling for direct marketing purposes.
- You can ask us to restrict the use of your personal data if:
 - It is not accurate,
 - It has been used unlawfully but you do not want us to delete it,
 - We do not need it any-more, but you want us to keep it for use in legal claims, or
 - if you have already asked us to stop using your data but you are waiting to receive confirmation from us as to whether we can comply with your request.
- In some circumstances you can compel us to erase your personal data and request a machine-readable copy of your personal data to transfer to another service provider.
- You have the right not to be subject to a decision based solely on automated processing (including profiling) that produces legal effects concerning you or similarly significantly affects you.

You will not have to pay a fee to access your personal data (or to exercise any of the other rights). However, we may charge a reasonable fee if your request for access is clearly unfounded or excessive. Alternatively, we may refuse to comply with the request in such circumstances.

If you wish to exercise your rights, please contact us at dpo@theevidencequarter.com

9. How to Complain

You can also lodge a complaint with the Information Commissioner's Office. They can be contacted using the information provided at:

Information Commissioner's Office
 Wycliffe House
 Water Lane
 Wilmslow
 Cheshire
 SK9 5AF

Helpline number: 0303 123 1113

ICO website: <https://ico.org.uk/concerns/>.



To identify your data and take relevant action should you submit a data subject rights request.	
---	--

School staff

Purpose	Lawful Basis for Processing
To write a research findings report based on information collected and analysed. No personal data will be in the report.	Processing is necessary for the purposes of the legitimate interests pursued CEI, also known as "legitimate interest" under UK GDPR Article 6.1(f).
For the organisations that are delivering their programmes you are involved with to invite you to participate in the research Project (you do not have to participate).	
To request your informed consent for participation as part of ethical practices (you do not have to participate in the study and can withdraw at any time) Please note: should you withdraw your participation when the data is being analysed, we would not be able to immediately remove your data until the analysis is complete.	
To identify whether you have agreed to participate in each area of the Project we have requested from you.	
To send you a survey so you can take part in the research study	
For us to contact you to participate in an interview which will be recorded as part of the research	



10. Contact us

If you have any questions, or wish to exercise any of your rights, then you can contact:

Project: SPACE Pilot Evaluation

Organisation: Centre for Evidence and Implementation

Address: The Evidence Quarter, Albany House, Westminster, SW1H 9EA

Alternatively, you can email us at dpo@theevidencequarter.com

11. Changes to this privacy notice

We may update this notice (and any supplemental privacy notice), from time to time as shown below. We will notify you of the changes where required by applicable law to do so.

Last modified January 2023

Appendix E Memorandum of Understanding



SPACE (2023) Pilot Evaluation MEMORANDUM OF UNDERSTANDING

Thank you for agreeing to participate in the pilot evaluation of SPACE, funded by the Education Endowment Foundation. The purpose of this agreement is to outline the commitments of the SPACE delivery team at the University of Surrey, the external evaluators at the Centre for Evidence and Implementation, and your school.

Please read this document and provide an e-signature at the end of this document.

1. What is this research about and why is it important?

The SPATial Cognition to Enhance mathematics (SPACE) programme is an intervention that aims to improve children's mathematics competence through structured Lego play. SPACE is being evaluated to understand how feasible it is to implement in Year 2 maths lessons.

Research evidence suggests there is a relationship between children's spatial abilities (e.g., spatial thinking and spatial language) and their mathematics outcomes, with the potential for spatial training to increase children's achievement in mathematics. Analysis of spatial training programmes in primary and secondary phases indicates that they can increase children's mathematics attainment, with the largest gains for children from disadvantaged backgrounds. SPACE aims to support improvements in children's outcomes relating to the following areas of the Year 2 curriculum: Geometry - properties of shapes, Geometry - position and direction, Measurement, Fractions, Place value, Multiplication, Addition and Subtraction.

Fifteen schools will participate in this evaluation. Each will receive training SPACE training, deliver it to one Year 2 class of around 30 pupils, and take part in the evaluation activity. This is a pilot evaluation, which means we are primarily seeking to understand the feasibility of implementing the intervention and the barriers and facilitators to doing so, rather than to measure impact. The evaluation will also test the use of measures to assess children's maths skills. The intervention and associated evaluation will run through the Autumn term of 2023.

The SPACE training is provided by the SPACE team from the University of Surrey (UoS, the "delivery team"). The team have developed SPACE as a fun and engaging way for children to develop spatial abilities through structured Lego play and have previously successfully tested a version of the intervention with 7-9-year-olds. The independent evaluation is being conducted by the Centre for Evidence and Implementation (CEI, the "evaluation team"). Throughout the duration of the project, you will be contacted by both the delivery team and the evaluation team.

The evaluation is funded by the Education Endowment Foundation (EEF), an independent charity dedicated to breaking the link between family income and educational achievement. An evaluation report will be published on the EEF website at the end of the project. This project is part of a wider DfE funded programme called the 'Accelerator Fund' which aims to increase access to evidence-informed programmes. School staff taking part in the project may be contacted with a request to participate in further research into their experience of taking part in an Accelerator Fund project.



2. Who can take part in the study?

Schools are eligible to take part if they are:

- Mainstream state-funded primary schools in England
- Schools with a minimum of one Year 2 class (mixed year group classes will not be eligible to take part).
- Schools not currently delivering maths interventions in Year 2 (including 1stClass@number and Ark Mastery)

3. What does your school get for taking part?

- Participation in research that will help to develop the programme to support children's spatial reasoning and mathematics abilities.
- Your school will receive SPACE training and resources free of charge
- Your school will receive £500 for fully participating in the assessment activities at the end of the project: £250 for completion of pre-intervention assessments, and £250 for completion of post-intervention assessments.
- Schools and parents/carers (on demand) will receive a summary of the evaluation including suggestions of activities for parents/carers and teachers to do with children to have a positive impact on their maths abilities

4. More about the study

Who is leading the SPACE study? Two teams are involved in this study. A team from CEI will lead the evaluation. The CEI team will be responsible for managing the child assessment process and other data collection. A delivery team from the UoS is responsible for training schools and supporting their implementation of SPACE.

Has the study received ethical approval? Ethical approval has been supplied by the University of Surrey REC and a favourable opinion on the study has been returned by the Social Research Association's Research Ethics Committee.

Where can I find out the results of the study? CEI will write an evaluation report. This will be published on the Education Endowment Foundation website. A summary of the findings will be sent to your school, posted on the Surrey University project website and sent to requesting parents/carers. Findings may also be disseminated via research publications.

5. Responsibilities

5.1. School responsibilities

5.1.1. Delivery

You will be one of 15 schools recruited in England. In each school that takes part in the evaluation, the classroom teacher and teaching assistant from one Year 2 class will be expected to attend half a day of training, face-to-face. The training will take place in September 2023 in small groups local to your school. The training will include full instructions on how to implement SPACE, as well as the research background to the programme.

Teachers and teaching assistants will then deliver the intervention to their class in two 30-minute sessions per week for six weeks during normal maths teaching time, in the Autumn term of 2023.

Schools will be provided with all the resources necessary to implement the programme, including the Lego kits containing the correct blocks for each child and booklets for children to complete. As part of the programme, schools will need to:



- send information about SPACE and the evaluation to the parent/carer of each child in the selected class to inform them about SPACE and giving them the opportunity to withdraw their child from the evaluation,
- take part in fortnightly check-ins with the delivery team,
- deliver 2 sessions lasting 30 minutes every week for a total of 6 weeks (=12 sessions in total), including the weekly theme videos
- complete and return each child's model booklet to the delivery team to record engagement,
- store the Lego safely and return it to the SPACE team at pre-specified intervals.

5.1.2. Evaluation

All 15 schools will take part in the evaluation activity. Schools are expected to facilitate and allow time for the following data collection:

- Administrative data: Schools will provide programme monitoring data including the dates, attendance, and duration of SPACE sessions to the delivery and evaluation teams as requested.
- Surveys: All teaching staff who attend SPACE training will be asked to complete a short online survey at three timepoints: before training, at the end of SPACE delivery, and at the end of the Spring 2024 term. The survey will include questions about teachers' knowledge and confidence in teaching spatial skills and their experiences of training and delivery.
- Interviews: One member of the SPACE trained teaching staff from each school (either a teacher or a teaching assistant) will take part in a virtual interview lasting no more than 45 minutes. In half of the participating schools, a member of senior leadership will take part in a virtual interview lasting around 30 minutes.
- Child assessments: Teaching staff will administer an assessment of mathematical and spatial skills to all children in the class at two timepoints; one before starting to deliver SPACE and the second after delivering SPACE. With support from the evaluation team and a detailed manual, the tests will be administered by class teachers within normal teaching time and last no more than 45 minutes and can be administered across two shorter sessions if preferred. In some schools, one or more child assessment sessions will be observed by a member of the evaluation team.
- Observations: Across the project, the evaluation team will observe a total of 2 SPACE training sessions, 4 fortnightly support sessions, and 4 SPACE sessions. We will be in touch with you at the start of the Autumn term 2023 to arrange observations at convenient times if your school is selected for an observation.

5.1.3. General

- Commit to participating in all delivery and evaluation activities for the duration of the trial between September 2023 – April 2024, as outlined in section 7.
- Nominate a named SPACE delivery lead as the main point of contact for the delivery and evaluation teams. They will provide support to schedule and carry out evaluation activities. They must also teach the programme.
- Nominate an SLT champion to oversee SPACE delivery and evaluation in your school
- Commit to keeping the same teacher and teaching assistant in Year 2 for the duration of the intervention wherever possible
- Distribute information letters to parents: Inform parents about the school's participation in the trial and how student data will be processed and offer them the opportunity to withdraw from the research
- Keep a record of children who have been withdrawn from the research project and inform the evaluation team of the number of children who have been withdrawn. The school should not send the child assessment data of children who have been withdrawn to the evaluation or delivery team



- Be responsive to requests from the delivery and evaluation teams for information, aiming to respond to emails within a working week
- Release the classroom teacher and teaching assistant from Year 2 to be available for the half day of training and other support requirements
- Deliver the SPACE programme as intended in Year 2 classes

5.2. SPACE delivery team (UoS) responsibilities

- Give all participating schools access to the SPACE training and delivery materials
- Deliver all training and support sessions
- Handle delivery queries made by schools and respond to schools in a timely manner

5.3. Evaluation team (CEI) responsibilities

- Provide at least two weeks' notice before any evaluation activities need to be completed by the school
- Be a point of contact for all queries about the pilot evaluation of SPACE
- Collect and analyse data from schools to evaluate SPCE, processing personal data as set out below and in the data privacy notice

6. Data sharing and data protection

UoS and CEI are independent data controllers for the purposes of delivery and evaluation, respectively. All information collected as part of this study will be processed and stored in accordance with GDPR and the Data Protection Act 2018. A detailed Data Sharing Agreement will be put in place between your school and the evaluation team and delivery team. Data will be stored securely on a dedicated drive and only the research team will have access. After the evaluation is complete, the delivery and evaluations team will retain participant data in anonymised form for research and knowledge exchange purposes, including academic presentations or publications, for two years (CEI) and six years (UoS) after the publication of the final project report and then securely destroyed. No schools or individual children will be identifiable in the report or dissemination of any results.

The legal basis for processing personal data for CEI is legitimate interest. The legal basis for processing personal data for the UoS is public interest. CEI will share anonymised teacher survey data and child assessment data with the SPACE delivery team for further analysis, using Egress, a secure email server. Anonymous data will also be processed by approved Data Processors for the purposes of transcription and data entry as necessary. There will be no international data transfers outside of the EU. CEI and UoS will act as independent data controllers for the purposes of evaluation and delivery respectively throughout the duration of this evaluation. The details of the member of staff signing the MOU (name and work email) will be shared with the EEF. Please see [EEF's privacy notice](#) for more information on how EEF processes and uses your data.

Detailed information about how participant data will be used for this project can be found in the Data Privacy Notice.

For further information, please contact:

The delivery team, University of Surrey:

Professor Emily K. Farran

University of Surrey
06AC05, School of Psychology
Guildford
Surrey

The evaluation team, CEI:

Jane Lewis

Centre for Evidence and Implementation
The Evidence Quarter, Albany House
London
SW1H 9EA



GU2 7XH
e.farran@surrey.ac.uk

Jane.lewis@ceiglobal.org
 020 8175 1313

7. Key Dates

Activity	Date
Schools sign up to the project	March-August 2023
Schools distribute parent/carer information sheet	September 2023
SPACE Training (half day)	September 2023
Teacher survey 1	September 2023
Pre-intervention child assessment	September 2023
SPACE delivery	September-December 2023
Observations	September-December 2023
Teaching staff and SLT interviews	September-December 2023
Teacher survey 2	October-December 2023
Post-intervention child assessment	December 2023
Teacher survey 3	March-April 2024
Results of project published (estimated)	July 2024

8. SPACE STUDY: MEMORANDUM OF UNDERSTANDING SCHOOL AGREEMENT

The requirements of schools taking part in the research study are summarised below. This form is to be completed by the Head Teacher. Please read carefully and, if you are happy to take part, please **sign in the space provided below**.

1. I confirm that we will deliver SPACE and carry out associated activities, comply with the requirements of the evaluation, and fulfil the school responsibilities as described in section 5.1
2. We will agree to the terms of a Data Sharing Agreement (provided by the evaluation team) and provide the data requested.
3. I agree to notify the SPACE delivery team, at the earliest opportunity, if the school has any issues that could affect the continuation of the delivery of SPACE within our school.
4. I agree for this school to take part in the SPACE study and accept the terms and conditions outlined in this Memorandum of Understanding.

Headteacher signature

Name: [Click or tap here to enter text.](#)

E-signature: [Click or tap here to enter text.](#)

Date: [Click or tap to enter a date.](#)

5

SPACE pilot trial MOU v2 20230203

Appendix F Parent/guardian information sheet

PARENT INFORMATION SHEET

Title of Study: SPATial Cognition to Enhance mathematical learning (SPACE)

University of Surrey Ref: FHMS 22-23 101 EGA

Version 2 – 28/02/2023

PLEASE KEEP A COPY OF THIS INFORMATION SHEET FOR YOUR RECORDS

Section: Taking Part

Invitation Paragraph

[INSERT SCHOOL NAME] has agreed to participate in the SPATial Cognition to Enhance mathematical learning (SPACE) programme.

What is the purpose of the study?

We have developed a 6-week Lego intervention that is designed to improve maths abilities in children and is highly engaging. The aim of this study is to evaluate the intervention.

Who is responsible for this study?

SPACE is being delivered by the University of Surrey, led by Professor Emily Farran. It also involves collaborators at University College Dublin, Loughborough University, and Birkbeck. The programme is being independently evaluated by the Centre for Evidence and implementation (CEI), an organisation with significant experience undertaking research and evaluation in schools.

Why has my child been invited to take part?

Your child is in Year 2, and the school Headteacher has given permission for information about the study to be sent out to parents/caregivers.

Does my child have to take part in the study?

All children in the selected class will take part in the SPACE programme during normal maths lessons. As the programme content falls within the range of usual curriculum activities, approval for your child to receive the SPACE programme and to complete the assessments has been granted by the school headteacher (in alignment with the British Psychological Society Code of Human Research Ethics, section 4.8).

However, participation in the evaluation is voluntary. This means that you can opt out of your child's assessment scores, name, and date of birth being shared by the school with the evaluation team.

If you are happy for your child to take part in the evaluation of SPACE, no further action is required. If you do not want your child to take part in the evaluation, please indicate via the opt-out form and return to your child's school no later than [A DATE TWO DAYS BEFORE DUE TO GO IN]. Please contact us if there is anything that is not clear, or if you have any questions, or need more information.

What does the study involve?

All participating children will complete classroom-based tests which measure spatial and mathematical skills (not dissimilar to SATs and other progress tests) before and after the programme. The assessment will be delivered by the classroom teacher and will take around 45 minutes to complete. The evaluation team will be conducting classroom observations to understand how the intervention is delivered and the level of pupil engagement, but no video recording will be made.

Approximate timeline of the programme

Time	What the teacher / TA and child will do
Pre-intervention	
Child assessment	Children: Pre-intervention classroom-based spatial and mathematics tests (approx 45 minutes).

Child assessment	Children: Pre-intervention classroom-based spatial and mathematics tests (approx 45 minutes). <i>Some assessment sessions will be observed by the evaluation team.</i>
During intervention	
Intervention	All: Lego intervention (6 hours total across 6 weeks during maths lessons). <i>Some SPACE sessions will be observed by the evaluation team.</i>
Post intervention	
Child assessment	Children: Post-intervention classroom-based spatial and mathematics tests (approx. 45 minutes). <i>Some assessment sessions will be observed by the evaluation team.</i>

What are the possible benefits in taking part?

We anticipate that your child will enjoy taking part in the intervention, and we predict improvement in mathematics in these children following taking part in the intervention. The results from our measures will not be used to indicate an individual child's talent and/or interest in maths or spatial ability. All data will be pseudonymised, and we will not be in a position to provide you or your school with your child's individual results. A summary of the findings from the evaluation will be sent to your child's school, posted on the project website and sent to you on request (please indicate interest via the form at the bottom of this information sheet). This will include suggestions for both parents and teachers of activities that you might like to do with your child which could have a positive impact on their maths abilities.

Are there any potential risks involved?

The programme is designed to be fun and enjoyable for children. However, there is a possibility that your child might find some of the tasks difficult to complete. Your child can take a break, withdraw from the study or stop at any time.

How is the project being funded?

The SPACE programme is being funded by the Education Endowment Foundation

Will my child's participation be kept confidential?

We are responsible for making sure your child's participation is kept confidential, and any data is kept secure and used only in the way described in this information sheet. Your information may be reviewed for monitoring and audit purposes, by the University of Surrey and/or regulators who will treat your data in confidence.

Will my child's data be shared or used in future studies?

Anonymised numerical data will be deposited or submitted to an open source online research data repository at the end of the study. These data may be used for future research.

What will happen to the results of the study?

CEI will lead an evaluation report. Further dissemination, released after the evaluation report, will be sent to your child's school, posted on the project website and sent to you on request (by indicating this via the form at the bottom of this information sheet). Findings may also be disseminated via research publications.

Who has reviewed this study?

This study was reviewed and given a favourable ethical opinion by the University of Surrey Ethics Committee.

Section: Your personal data

What is personal data?

‘Personal Data’ means any information that identifies you or your child as an individual. The personal data that we will collect will include your child’s name and date of birth, which is regarded as ‘personal data’. We will use this information to determine your child’s age, and to link your child’s data together, as explained in the ‘What is the purpose of the study’ section above. Your child’s name will then be replaced with a Unique Personal Number (UPN), thus pseudonymising the data. The “Unique Identifier Key” document, which links the UPN with personal data will be stored in a password protected file in a separate folder to the pseudonymised participant data.

Who is handling my personal data?

The University of Surrey and CEI, who have the legal responsibility for managing the personal data in this study, will act as ‘Independent Data Controllers’ for this study. The University of Surrey will only handle personal data necessary to the delivery of the intervention, and CEI will only handle personal data necessary for carrying out the evaluation. Only pseudonymised data and the “Unique Identifier Key” documents will be shared between the two teams (abiding by a legal data sharing agreement).

What will happen to my personal data?

As a publicly-funded organisation, we must only use identifiable personal information from people who have agreed to take part in research, and process this data fairly and lawfully. The University of Surrey processes personal data for the purposes of carrying out research in the public interest. The legal basis CEI relies on to process personal data is legitimate interest. This means that when you take part in this study, we will use and look after your data in the ways needed to achieve the outcomes of the study. Your personal data will be held and processed in the strictest confidence, and in accordance with current data protection regulations. When acting as the data controller, the University will keep identifiable information about your child for 6 years after the study has finished. CEI will keep identifiable data about staff participating in the research for 2 years after the study has finished.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways for the research to be reliable and accurate. If you decide to withdraw from the study once the programme has completed (20th December 2023), we may not be able to withdraw your data. We will keep and use the minimum amount of your personally-identifiable information that we have already collected in order to complete the study.

If you wish to complain about how the University of Surrey or CEI have handled your personal data, you can contact the University of Surrey Data Protection Officer-(dataprotection@surrey.ac.uk) or the CEI Data Protection Officer (dpo@theevidencequarter.com). If you are not satisfied with our response or believe we are processing your personal data in a way that is not lawful, you can contact the Information Commissioner’s Office (ICO) (<https://ico.org.uk/>).

You can find out more about how we use your information <https://www.surrey.ac.uk/information-management/data-protection> and/or by contacting dataprotection@surrey.ac.uk.

Section: Further information

What if you have a query or something goes wrong?

If you are unsure about something you can contact the delivery team or the evaluation team for further advice using the contact details at the bottom of this information sheet.

However, if your query has not been handled to your satisfaction, or if you are unhappy and wish to make a formal complaint to someone independent of the delivery or evaluation teams, then please contact:

Appendix G Parent/guardian opt-out form

Parent Opt-Out form

Thank you for considering taking part in this intervention programme.

Title of Study: SPAtial Cognition to Enhance mathematical learning (SPACE)

University of Surrey Ref: FHMS 22-23 101 EGA

Version 2 – 28/02/2023

If you are happy for your child to take part in the programme, you do **not** need to complete this form.

The-SPACE programme will take place during normal maths lessons and the content falls within the range of usual curriculum activities, therefore approval has been granted by the school headteacher (in alignment with the British Psychological Society Code of Human Research Ethics, section 4.8) for your child to take part in the programme. However, participation in the evaluation is voluntary and your child does not have to take part. The form relates to participation in the *evaluation* of SPACE, i.e. the sharing of your child's assessment scores, name and date of birth by your child's school, with the evaluation team.

I do not want my child to take part in the evaluation of the "SPAtial Cognition to Enhance mathematical learning (SPACE)" programme, under the responsibility of Professor Emily Farran at University of Surrey and collaborators at University College Dublin, Loughborough University, Birkbeck and the Centre for Evidence and Implementation

Name of Child

First Name _____

Surname _____

School _____

Class _____

Name of Parent

First Name _____

Surname _____

Date _____

Appendix H Teaching staff interview topic guide



EVALUATION OF SPACE

INTERVIEWS WITH TEACHERS AND TEACHING ASSISTANTS

The aims of this component are to understand:

- *Sufficiency of the training and support provided*
- *Feasibility of SPACE (barriers and enablers) and whether implemented as intended*
- *Acceptability of SPACE to staff and children's engagement*
- *Perceived impacts for staff and children, including children on FSM, and possible mechanisms of change*

INTRODUCTION

- *Introduce self and CEI*
- *Explain purpose and coverage of the interview*
- *Remind of information sheet and consent form: remind of voluntary participation, anonymity and confidentiality, able to skip questions, confirm permission to record*
- *Invite any questions before starting, confirm availability for intended duration*

1. BACKGROUND AND DECISION TO PARTICIPATE IN SPACE

1.1 Background

- What is your role in the school including any additional responsibilities (e.g. pastoral, SLT)
- How long have you worked at this school, how long in education overall, how long qualified (for teachers)
- Current class size and overview
- Could you give me a brief description of your school: Type; Size; overview of school population; any other particular features of the school
- Role in relation to SPACE
- Are any other classes using the programme, outside of the evaluation
- Prior to SPACE, had you done any training in spatial skills or used related activities

1.2 Decision to take part in SPACE

- Were you involved in the school's decision to take part in SPACE and/or that your class would be involved

2. EXPERIENCE OF TRAINING AND OTHER SUPPORT BEFORE DELIVERY

2.1 Information in advance of training day:

- What information did you have about SPACE before the training day (manual, information sheets, consent forms)

2.2 Experience of the training day:

- Did you attend the full day;
- What was your experience of the training day:

2.3 Materials, resources and preparation after training before delivery began

- What materials and resources did you receive before you began using SPACE
- What if any preparation did you do before the first session

- Did you use / need the online training videos, provided by the SPACE team to support delivery?

2.4 Overall readiness

- Overall, how ready did you feel to deliver SPACE by the time of the first session

3. EXPERIENCES OF DELIVERING SPACE

3.1 Assessment

- What was your experience of administering the assessment like?

3.2 Structure of delivery

- Who was in the class for delivery
- So far, how many sessions have you delivered overall and per week, and how long did they last

3.3 Content and style of session

- How did you introduce the sessions to children
- Did children work autonomously
- How did you support children
- How well did children engage with the sessions

4. FEASIBILITY OF DELIVERING SPACE

4.1 Feasibility and adaptations

- What went smoothly, what was more difficult and why
- Did you need to make any adaptations to the programme; what and why

4.2 Fit and acceptability of the programme

- What do you think of using the programme in maths lessons
- Overall, how well did the programme fit into your maths teaching
- What did you do less of to make time for the SPACE sessions; any implications of this

4.3 Liaison with SPACE team and support

- How easy was it to receive, store and return the Lego materials and booklets
- How much contact did you have with the SPACE team
- How many of the fortnightly support sessions/informal catch ups with the SPACE team have you attended
- How easy was it to provide the information and data the SPACE team asked for

4.4 School support for the programme

- How well supported did you feel by the school to deliver SPACE

4.5 Fit of SPACE with:

- School strategy, priorities, improvement plan
- EYFS framework
- Ofsted inspection criteria
- School culture and climate
- Any other features of school and wider context

5. PERCEPTIONS OF IMPACTS

5.1 Impacts for children

- What if any impacts do you think SPACE has had for children
- How did these come about? What was it specifically about the programme and materials that helped
- Were impacts experienced equally

5.2 Impacts for teaching staff

- What if any impacts did SPACE have for them

- How did these come about? What was it specifically about the programme that helped

5.3 Continuing to use SPACE strategies – explain this is not a requirement

- Will you continue to use any of the SPACE approaches or activities next term (e.g., language and ideas from the prompt cards)
- Do you plan to share the SPACE strategies with other staff - or has this happened already
- Do you anticipate lasting impact of the programme on your teaching

6. FINAL THOUGHTS and closing

- Overall, what does it take to do SPACE well
- Are there any ways in which SPACE could be improved
- Would you recommend SPACE to another school
- Thank for their time
- Reiterate confidentiality and offer opportunity to ask questions

Appendix I Disaggregated summary of school staff interviewees by school

School ID	SLT Champion	Teacher	Teaching Assistant	Total
A	✓	-	✓	2
B	-	✓	-	1
C	-	-	✓	1
D	✓	✓	-	2
E	✓	✓	-	2
F	✓	✓	-	2
G	-	- ¹	-	0
H	-	✓	-	1
I	-	-	✓	1
J	✓	✓	-	2
K	-	✓	-	1
L	✓	✓	-	2
M	- ²	✓	-	1
N	-	✓	-	1
O	-	✓	-	1

¹ Participant declined to participate.

² Participant declined to participate.

Appendix J Delivery team interview topic guide



EVALUATION OF SPACE GROUP INTERVIEW WITH SPACE TEAM: TIME 3 [January]

The aims of this component are to understand perceptions about:

- *Implementation quality, fidelity, barriers and enablers*
- *Support arrangements for schools*
- *Impacts for teachers, schools and children*
- *Schools sustainment of SPACE*
- *Ambitions and approaches to scaling delivery of SPACE*
- *Learning, plans and considerations for the future*

INTRODUCTION

- *Explain purpose and coverage of the interview*
- *Remind of information sheet and consent form: remind of voluntary participation, anonymity and confidentiality, able to skip questions, confirm permission to record*
- *Invite any questions before starting, confirm availability for intended duration*

1. BACKGROUND

1.1 Background: if any participants are new to the evaluation

2. SCHOOL SUPPORT – brief as covered with MZ and AK

- 2.1 Support sessions for schools
- 2.2 Support materials provided to schools
- 2.3 Overall learning about school support arrangements

3. IMPLEMENTATION

- 3.1 What is their perception of the feasibility of SPACE for delivery as planned
- 3.2 Perceptions of the quality of implementation of SPACE by schools
- 3.3 Assessment delivery
- 3.4 Any other key learning about implementation and how to support it

4. IMPACTS AND SUSTAINMENT

- 4.1 What is their perception of any impacts for staff (and what is this based on)
- 4.2 What is their perception of any impacts for children (and what is this based on)
- 4.3. What is their perception of any impacts for schools (and what is this based on)
- 4.4 Any reflections on the theory of change, any refinements they'd make or are considering

5. SCALING

- 5.1 What are their ambitions or plans for delivering SPACE at a greater scale in the future
- 5.2 How would they actually scale delivery
- 5.3 Considerations for a trial-able model at scale

6. FINAL REFLECTIONS

- 6.1 Any final reflections, learning or plans

Appendix K Example observation guidelines



EVALUATION OF SPACE

OBSERVATION SCHEDULE: SCHOOL SESSION DELIVERY

The aims of this component are:

- *To extend the CEI evaluation team's understanding of SPACE through observing how it is delivered*
- *To assess key aspects of fidelity and delivery as intended*
 - *duration of session*
 - *use of story, video and booklets*
 - *whether children are working autonomously and without staff building models for them*
 - *how staff support and encourage children*
 - *how well children are engaging*
- *To identify any possible implementation issues arising, for exploration in interviews*

NOTE: Notes will be shared with the evaluation team for learning and reflection, and will be drawn on in the report where relevant implementation issues are raised.

INTRODUCTION

- *Explain the purpose of your attendance: to extend our understanding of SPACE, to see what's involved in delivering it, to see how children get involved*

1. School, date, session number, start time

2. Who is present at the session (number of school staff, roles; number of children). Does anyone leave before the end?

3. How is the session introduced and by whom? Are the story and video used? Are the booklets explained? What is your perception of how children are engaging at this stage?

4. What happens during the session? What are the teacher and teaching assistant doing (e.g. addressing the whole class; working with individual children). How are they supporting and encouraging children? Are they handling children's models?

Are there any adaptations or mitigations made?

5. Are the teacher and teaching assistant visibly using the prompt cards and manual?

6. What spatial language do you hear the teacher and teaching assistant using? Are children notably using spatial language? E.g., turn, rotate, next to, closer, further, midpoint, left, right, between, near, far, same, different, lined up, side, front, back, more, less, smaller, larger, bigger, zoom in, zoom out, longer, shorter, same view, different views, around, on the corner, part, pointy, flat, symmetrical, whole, on top, under, combine, separate, wider, narrower, horizontal, vertical, half

7. What is your perception of how children are engaging? Are they focused? Do they appear to be enjoying it? Do they appear to be trying hard? Do children help each other? Do children appear to be completing the models? Is there evidence of solo play?

8. How is the session closed. Are the booklets completed and gathered up? Do children break down their models? Note finish time.

9. Any other comments or reflections? Note any implementation challenges and any other issues to explore in interviews or SPACE staff groups

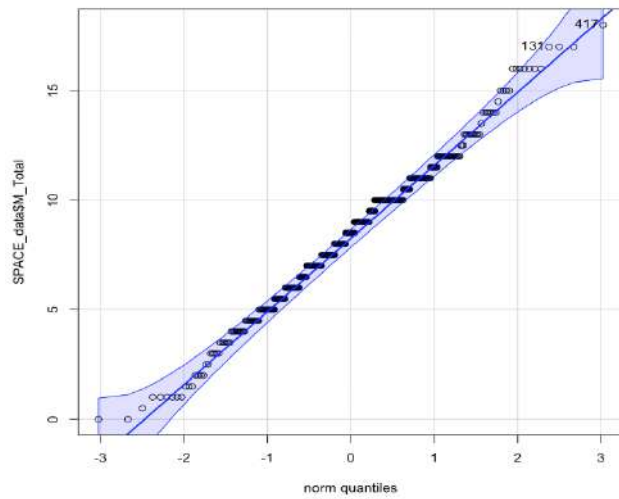
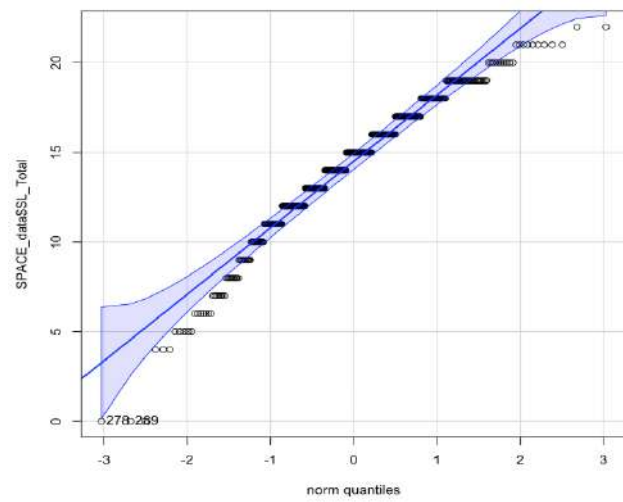
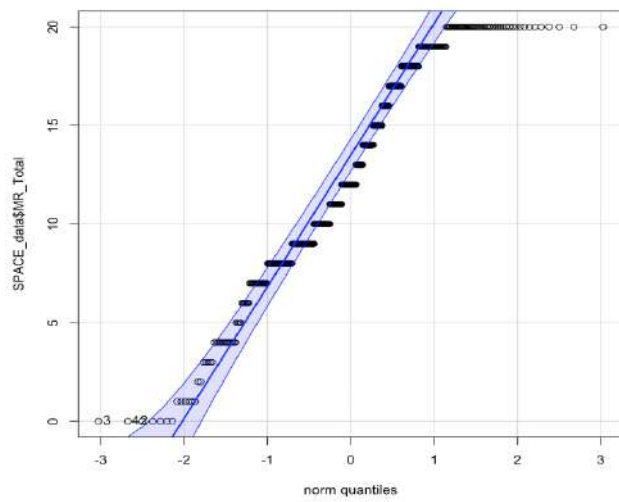
Does it appear that the session goes as normal, or is it affected by the presence of the researcher?

10. Note the practicalities of using the Lego kits – is there enough space on the tables, do children have their own individual kit, are there enough bricks etc.

Appendix L Number of survey participants per school by time point

School ID	Survey 1	Survey 2	Survey 3
A	2	1	1
B	1	1	1
C	2	2	1
D	2	0	1
E	1	1	1
F	2	2	2
G	0	1	0
H	1	2	2
I	3	2	1
J	2	1	1
K	1	1	1
L	1	1	1
M	1	1	2
N	2	1	1
O	1	1	0
Total	22	18	16

Appendix M Q-Q plots to for deviation from normality for each assessment



You may re-use this document/publication (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence v3.0.

To view this licence, visit <https://nationalarchives.gov.uk/doc/open-government-licence/version/3> or email: psi@nationalarchives.gsi.gov.uk

Where we have identified any third-party copyright information you will need to obtain permission from the copyright holders concerned. The views expressed in this report are the authors' and do not necessarily reflect those of the Department for Education.

This document is available for download at <https://educationendowmentfoundation.org.uk>



The Education Endowment Foundation
5th Floor, Millbank Tower
21–24 Millbank
London
SW1P 4QP

<https://educationendowmentfoundation.org.uk>

 [@EducEndowFoundn](https://twitter.com/EducEndowFoundn)

 Facebook.com/EducEndowFoundn